

**Advisory Action
Before the Filing of an Appeal Brief**

Application No.

10/584,725

Applicant(s)

KITAOKA ET AL.

Examiner

MATTHEW J. SONG

Art Unit

1792

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED 28 January 2009 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

1. ☒ The reply was filed after a final rejection, but prior to or on the same day as filing a Notice of Appeal. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114. The reply must be filed within one of the following time periods:

- a) ☒ The period for reply expires 3 months from the mailing date of the final rejection.
b) ☐ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.
Examiner Note: If box 1 is checked, check either box (a) or (b). ONLY CHECK BOX (b) WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on _____. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

AMENDMENTS

3. ☐ The proposed amendment(s) filed after a final rejection, but prior to the date of filing a brief, will not be entered because
(a) ☐ They raise new issues that would require further consideration and/or search (see NOTE below);
(b) ☐ They raise the issue of new matter (see NOTE below);
(c) ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
(d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.

NOTE: _____. (See 37 CFR 1.116 and 41.33(a)).

4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).
5. ☐ Applicant's reply has overcome the following rejection(s): _____.
6. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).
7. ☐ For purposes of appeal, the proposed amendment(s): a) ☐ will not be entered, or b) ☐ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.
The status of the claim(s) is (or will be) as follows:
Claim(s) allowed: _____.
Claim(s) objected to: _____.
Claim(s) rejected: _____.
Claim(s) withdrawn from consideration: _____.

AFFIDAVIT OR OTHER EVIDENCE

8. ☐ The affidavit or other evidence filed after a final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).
9. ☐ The affidavit or other evidence filed after the date of filing a Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing a good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).
10. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

11. ☒ The request for reconsideration has been considered but does NOT place the application in condition for allowance because:
See Continuation Sheet.
12. ☐ Note the attached Information Disclosure Statement(s). (PTO/SB/08) Paper No(s). _____.
13. ☐ Other: _____.

/Robert M Kunemund/
Primary Examiner, Art Unit 1792

Continuation of 11, does NOT place the application in condition for allowance because: Applicant's arguments filed 1/28/2009 have been fully considered but they are not persuasive.

In response to applicant's argument that the addition of Mg improves reproducibility of the crystal growth, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). Applicant teaches on page 3 of the specification that the flux includes Mg and the crystal can have a p-type electrical characteristic and the amount of nitrogen dissolved in the melt is increased because the flux includes Mg (paragraph [0012]). Therefore, Applicant teaches the Mg has two functions, one to dope and one as a flux to increase amount of dissolved nitrogen. Jeong et al teaches the basic mixture is one among magnesium doped to impurity (ET paragraph [26]). Jeong et al is silent to the concentration of the magnesium and Yoshida et al teaches doping with Mg to form a p-type GaN having a desired electrical resistivity, where that amount of dopant overlaps the range taught by applicant. Therefore, the proportion of Mg to the sum of Mg and Na would naturally flow from the teachings of the prior art because the prior art teaches overlapping impurities concentrations in the grow crystal thus would require optimization of the amount of Mg and the amount of Mg is a dopant, thus would tend to be a small proportion of the melt mixture.

It is noted that differences in concentration will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical (MPEP 2144.05). The combination of Jeong et al and Yoshida et al teaches doping Mg into the GaN crystal to obtain a doped crystal, and the amount of dopant within the mixture can be determined through routine experimentation to obtain the desired dopant amount. The combination of Jeong et al and Yoshida et al teaches a similar process of crystal growth, as applicant, comprising Na and Mg, where Mg is supplied as a doping impurity and the amount of Mg in the crystal overlaps; therefore the amount of Mg in proportion of Mg and Na would be expected. Applicant also alleges superior crystal quality however there is no comparative evidence of crystal quality.

Applicant's argument that Yoshida et al is directed to a multilayer process and Jeong et al is directed to a GaN monocrystal growth process is noted but not found persuasive. Jeong et al teaches Mg as an impurity in the melt. Yoshida et al is merely relied upon to teach a desirable amount of Mg in a GaN to produce desirable electrical properties. It is well known in the art of crystal growth that dopant is added to a melt to obtain a crystal with a desired amount of dopant (See Ivantsov et al col 6, ln 1-25).

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

In response to applicant's argument that the addition of Mg improves reproducibility of the crystal growth, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). Applicant teaches on page 3 of the specification that the flux includes Mg and the crystal can have a p-type electrical characteristic and the amount of nitrogen dissolved in the melt is increased because the flux includes Mg (paragraph [0012]). Therefore, Applicant teaches the Mg has two functions, one to dope and one as a flux to increase amount of dissolved nitrogen. Ivantsov et al teaches doping with Mg to form a p-type GaN, where that amount of dopant overlaps the range taught by applicant. Therefore, the proportion of Mg to the sum of Mg and Na would naturally flow from the teachings of the prior art because the prior art teaches overlapping impurities concentrations in the grow crystal thus would require optimization of the amount of Mg and the amount of Mg is a dopant, thus would tend to be a small proportion of the melt mixture.